AMENDMENTS

IN THE CLAIMS:

Please cancel claims 1-23 and 26, and amend claims 24-25, 27 and 31 as provided below:

1-23. (Canceled)

24. (Currently amended) The system of claim ~~23~~ 27, further comprising a grating in the laser portion at an interface of the second active layer and the covering layer.

25. (Currently amended) The system of claim ~~23~~ 27, further comprising an optical waveguide operably coupled to the optical amplifier portion, wherein optical signals generated by the laser portion are modulated by the electroabsorption modulator based on electrical signals applied thereto, and wherein the modulated optical signals are passed to the waveguide through the optical amplifier portion.

26. (Canceled).

27. (Currently amended) An electro-optical system, comprising:

a semiconductor substrate;

a first active layer overlying the semiconductor substrate;

a second active layer overlying the first active layer;

a covering layer overlying the second active layer; and

an electroabsorption modulator portion associated with the substrate and layers in a central portion thereof, disposed between a laser portion and an optical amplifier portion, respectively,

wherein the system comprises electrical contacts coupled to the electroabsorption modulator portion, laser portion, and optical amplifier portion, respectively; and wherein the system comprises ~~The system of claim 26, further comprising~~ an electrical waveguide electrically coupled to the electroabsorption modulator contacts, and operable to provide electrical signals thereto for modulation of optical signals from the laser portion.

28. (Original) The system of claim 27, wherein the electrical waveguide further comprises a millimeter or submillimeter antenna operable to convert millimeter or submillimeter waves into electrical signals or vice-versa.

29. (Original) The system of claim 27, wherein optical signals from the optical waveguide are converted to electrical signals to the electrical waveguide through the electroabsorption modulator portion.

30. (Original) The system of claim 27, wherein the semiconductor substrate is oriented upside down with respect to the electrical waveguide, and is electrically coupled to the electrical waveguide through the laser portion contacts, the electroabsorption modulator contacts, and the optical amplifier contacts, respectively, in a flip-chip type arrangement.

31. (Currently amended) The system of claim ~~23~~ 27, wherein one of the first and second active layer is optimized for the laser portion, and the other of the first and second active layer is optimized for the electroabsorption modulator portion.